TRIODE-OUTPUT PENTODE

Triode-pentode with separate cathodes.
Triode section intended for use in circuits for keyed A.G.C., sync. separation, sync. amplification and noise suppression.
Pentode section is intended for use as video output tube.

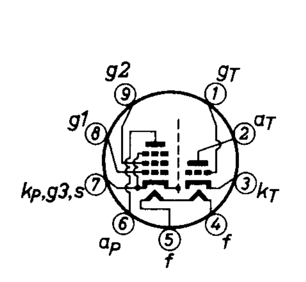
QUICK REFERENCE DATA			
Triode section			
Anode current	I_a	3	mA
Transconductance	S	4	mA/V
Amplification factor	μ	65	-
Pentode section			
Anode current	I_a	18	mA
Transconductance	S	11	mA/V
Amplification factor	$\mu_{g_2g_1}$	36	-

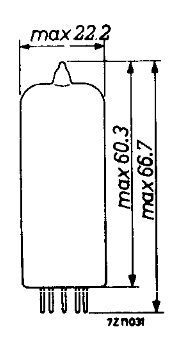
HEATING: Indirect by A.C. or D.C.; series supply

Heater current	I_f	300	mA
Heater voltage	V_f	15	V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





CAPACITANCES

Triode section

Anode to all except grid	$C_{a(g)}$		2.3	pF
Grid to all except anode	$C_{g(a)}$		3.8	pF
Anode to grid	C_{ag}		2.7	pF
Grid to heater	C_{gf}	max.	0.1	pF

Pentode section

Anode to all except grid No.1	$C_{a(g_1)}$		4.2	pF
Grid No.1 to all except anode	$C_{g_1(a)}$		8.7	pF
Anode to grid No.1	C_{ag_1}	max.	0.1	pF
Grid No.1 to heater	C_{g_1f}	max.	0.1	pF

Between triode and pentode sections

Anode triode to grid No.1 pentode	$C_{a_Tg_{1P}}$	max.	0.01	pF
Grid triode to grid No.1 pentode	$C_{g_Tg_{1P}}$	max.	0.01	pF

TYPICAL CHARACTERISTICS

Triode section

Anode voltage	V_a	200	V
Grid voltage	V_g	-1.7	V
Anode current	I_a	3	mA
Transconductance	S	4	mA/V
Amplification factor	μ	65	-

Pentode section

Anode voltage	V_a	170	200	220	V
Grid No.2 voltage	V_{g_2}	170	200	220	V
Grid No.1 voltage	V_{g_1}	-2.1	-2.9	-3.4	V
Anode current	I_a	18	18	18	mA
Grid No.2 current	I_{g_2}	3.0	3.0	3.0	mA
Transconductance	S	11	10.4	10	mA/V
Amplification factor	$\mu_{g_2g_1}$	36	36	36	-
Internal resistance	$R_{i\,min}$	100	130	150	kΩ

OPERATING CHARACTERISTICS

Pentode section

Video output tube

Supply voltage	V_b	170	200	220	V
Grid No. 2 voltage	V_{g2}	170	200	220	V
Anode series resistor	R_a	3	3	3	kΩ
Grid No. 1 voltage	V_{g1}	-2	-2.8	-3.3	V
Anode current	I_a	18	18	18	mA
Grid No. 2 current	I_{g2}	3.2	3.1	3.1	mA
Transconductance	S	10.4	10.0	9.7	mA/V

LIMITING VALUES (Design centre rating system)

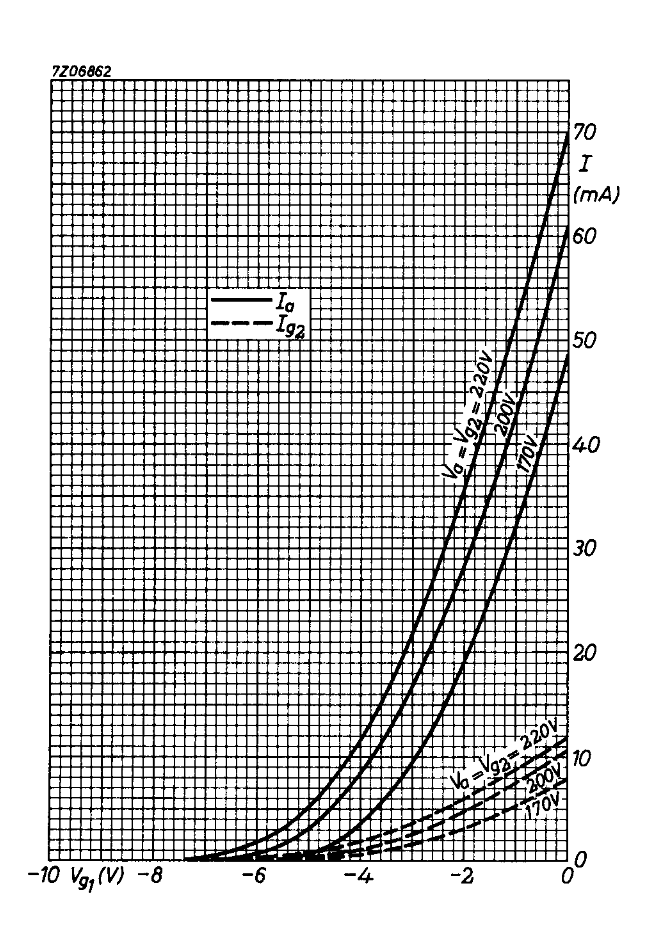
Triode section

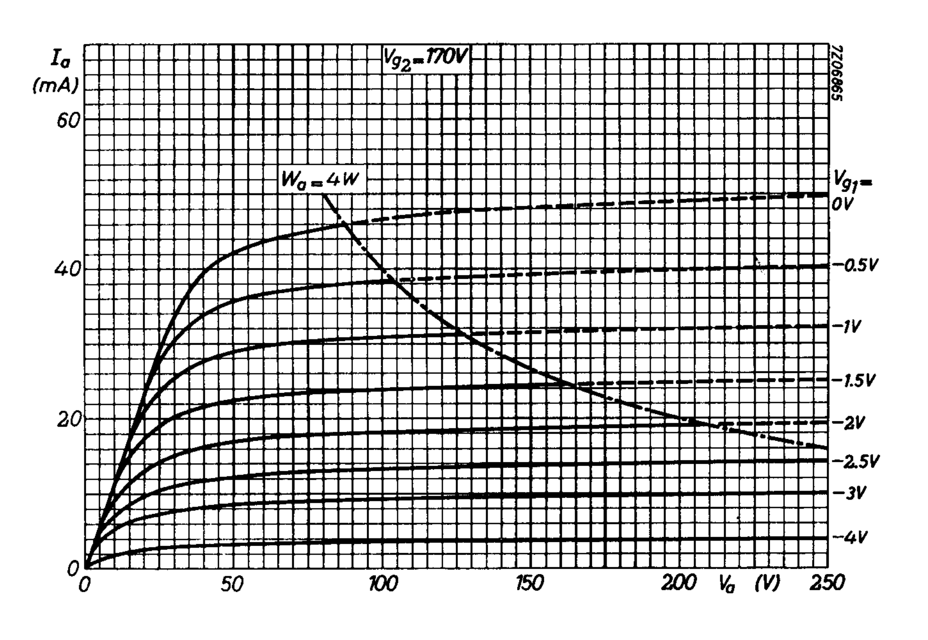
Anode voltage	V_{a_o}	max.	± 550	V
	V_a	max.	± 300	V
Anode peak voltage (I_a max. 0.1 mA)	V_{a_p}	max.	600	V [1])
Anode dissipation	W_a	max.	1	W
Cathode current	I_k	max.	12	mA
Grid resistor, for fixed bias	R_g	max.	1	MΩ
for automatic bias	R_g	max.	3	MΩ
Cathode to heater voltage, cathode neg.	V_{kf}	max.	150	V
cathode pos.	V_{kf}	max. 200 V =	+150	V_{RMS}

Pentode section

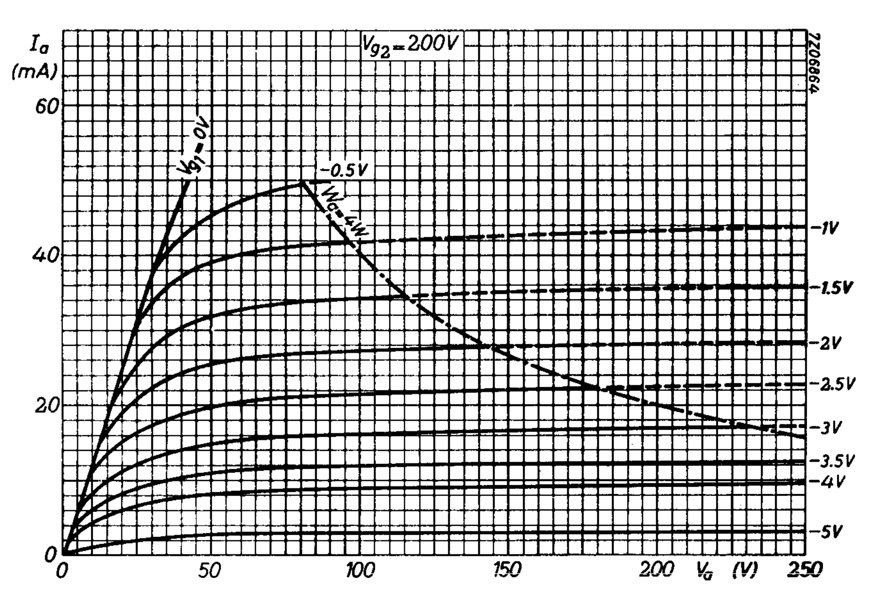
Anode voltage	V_{a_o}	max.	550	V
	V_a	max.	300	V
Grid No. 2 voltage	V_{g2_o}	max.	550	V
	V_{g2}	max.	250	V
Anode dissipation	W_a	max.	4	W
Grid No. 2 dissipation	W_{g2}	max.	1.7	W
Cathode current	I_k	max.	40	mA
Grid No. 1 resistor, for fixed bias	R_{g1}	max.	1	MΩ
for automatic bias	R_{g1}	max.	2	MΩ
Cathode to heater voltage	V_{kf}	max.	200	V

[1]) Max. pulse duration 18% of a cycle with a maximum of 18 μsec.

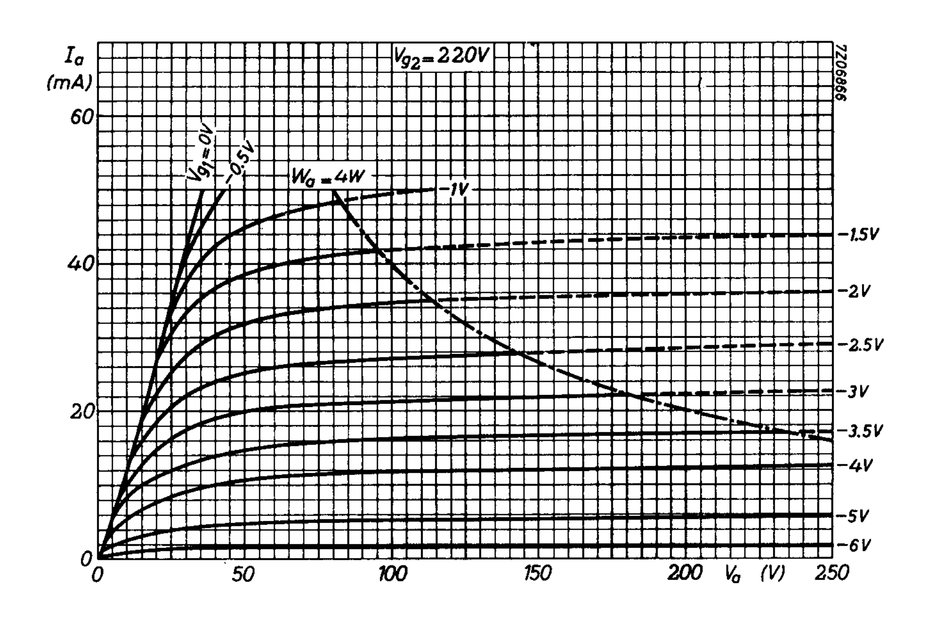

7Z06862
I_a
I_{g2}
$V_a = V_{g2} = 220V$
200V
170V
$V_a = V_{g2} = 220V$
200V
170V
70
I
(mA)
60
50
40
30
20
10
0
−10 V_{g1}(V) −8
−6
−4
−2
0

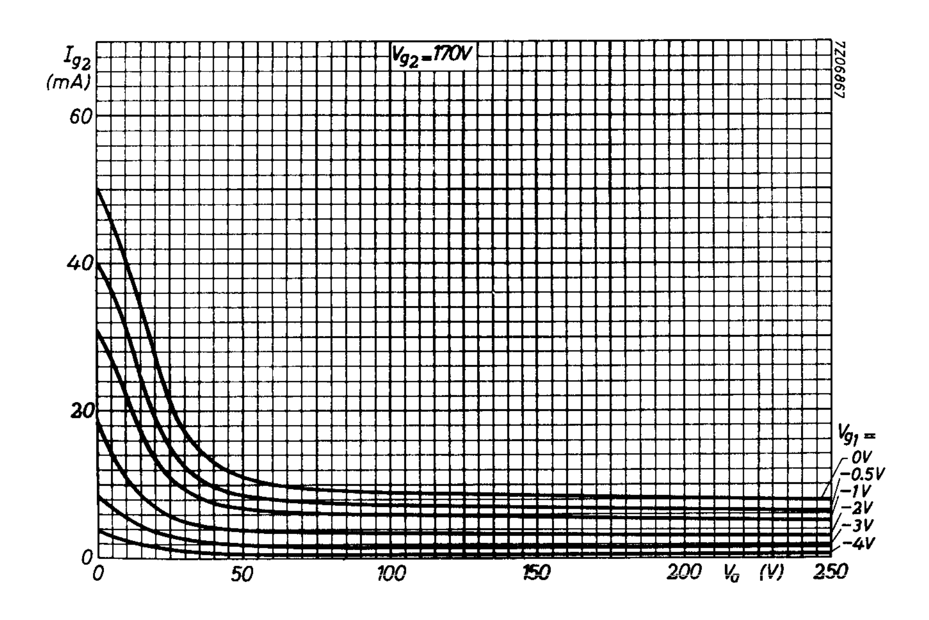


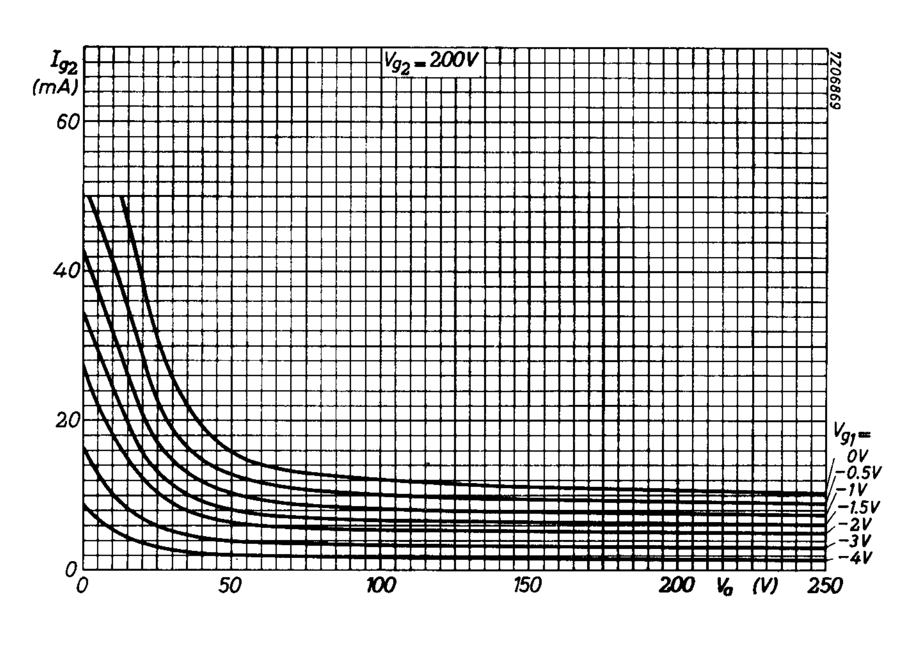
I_a (mA)
60
40
20
0
V_{g2} = 170V
7Z06865
W_a = 4W
V_{g1} = 0V
-0.5V
-1V
-1.5V
-2V
-2.5V
-3V
-4V
0
50
100
150
200
V_a (V)
250



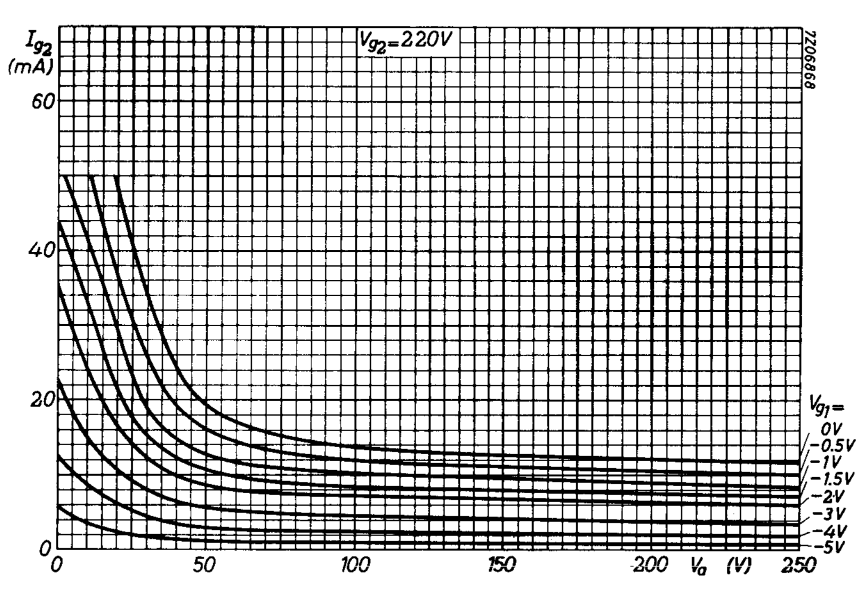
I_a (mA)
60
40
20
0
V_{g2} = 200V
7Z06864
V_{g1} = 0V
-0.5V
W_a = 4W
-1V
-1.5V
-2V
-2.5V
-3V
-3.5V
-4V
-5V
0
50
100
150
200
V_a (V)
250


I_a
(mA)
60
40
20
0
0
50
100
150
200
V_a (V)
250
V_{g2} = 220V
7Z06866
V_{g1} = 0V
−0.5V
W_a = 4W
−1V
−1.5V
−2V
−2.5V
−3V
−3.5V
−4V
−5V
−6V

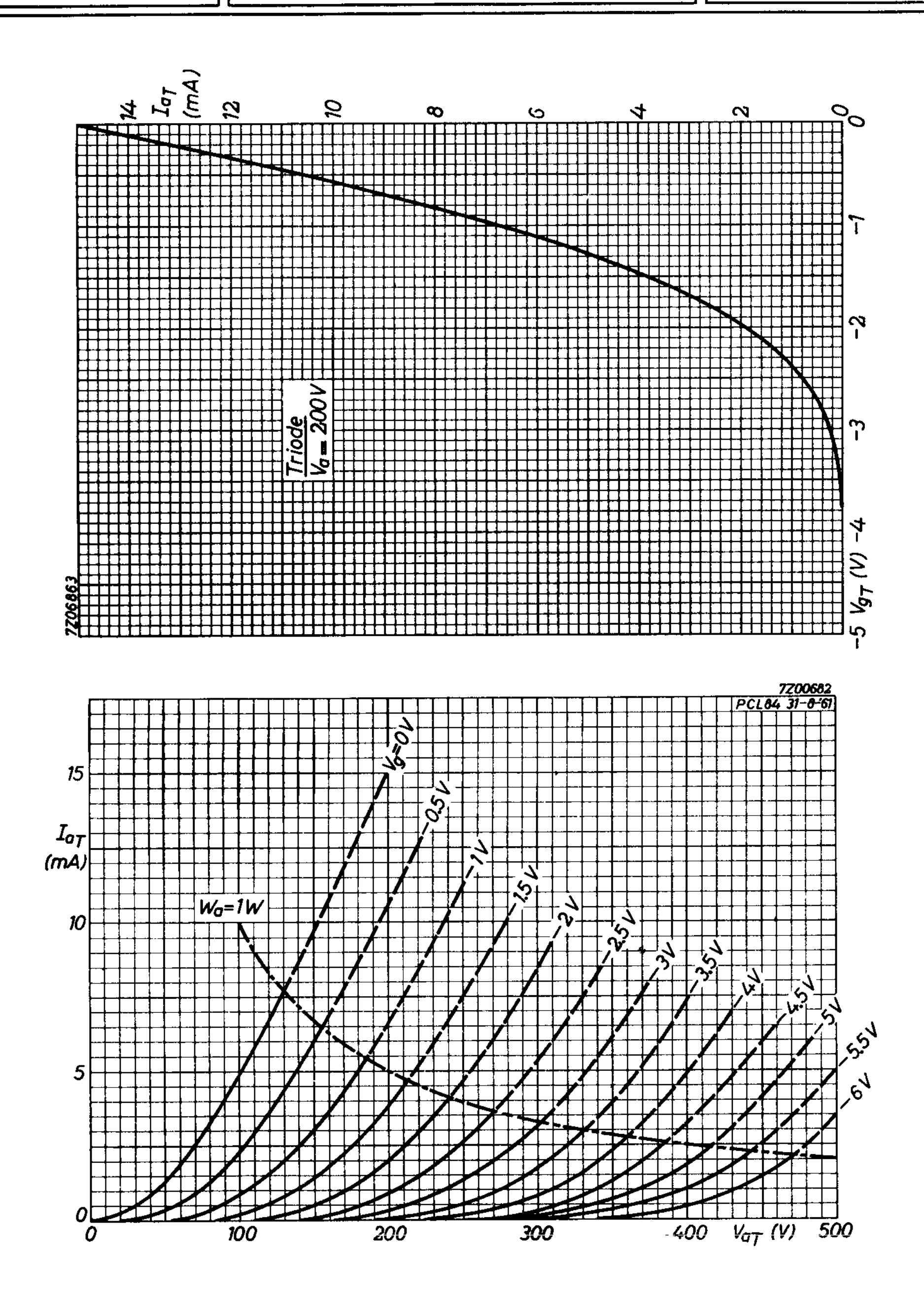

I_{g2}
(mA)
60
40
20
0
0
50
100
150
200
V_a (V)
250
V_{g2} = 170V
7Z06867
V_{g1} =
0V
−0.5V
−1V
−2V
−3V
−4V

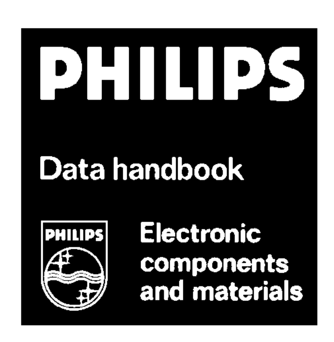


I_{g2} (mA)
60
40
20
0
V_{g2} = 200V
7Z06869
V_{g1} =
0V
−0.5V
−1V
−1.5V
−2V
−3V
−4V
0
50
100
150
200
V_a (V)
250



I_{g2} (mA)
60
40
20
0
V_{g2} = 220V
7Z06868
V_{g1} =
0V
−0.5V
−1V
−1.5V
−2V
−3V
−4V
−5V
0
50
100
150
200
V_a (V)
250


Triode
V_a = 200V
I_{aT} (mA)
14
12
10
8
6
4
2
0
0
−1
−2
−3
−4
−5 V_{gT} (V)
7Z06863
7Z00682
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I_{aT} (mA)
15
10
5
0
W_a=1W
V_g=0V
−0,5V
−1V
−1,5V
−2V
−2,5V
−3V
−3,5V
−4V
−4,5V
−5V
−5,5V
−6V
0
100
200
300
400
V_{aT} (V)
500



PCL84

page	sheet	date
1	1	1969.12
2	2	1968.09
3	3	1968.09
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7	7	1968.09
8	8	1968.09
9	FP	1999.08.02